What is claimed is:

1. A double balanced mixer for mixing an RF input signal with a local oscillator signal to provide at an output an intermediate frequency signal, comprising:

(a) a first diode ring having a first and second input port for receiving the local oscillator signal and a third input port for receiving the RF signal, the first diode ring further having a first output port for providing the intermediate frequency signal;

(b) a second diode ring having a fifth and sixth input port for receiving the local oscillator signal and a seventh input port for receiving the RF signal, the second diode ring further having a third output port for providing the intermediate frequency signal;

(c) a first balun connected across the first and second input ports and the fifth and sixth input ports for receiving the local oscillator signal;

(d) a second balun connected to the third and seventh input ports for receiving the RF signal; and

(e) a third balun connected to the first and third output ports for providing the intermediate frequency signal.

2. The double balanced mixer according to claim 1, wherein the first balun includes a first transformer that has a first and a second winding and a second transformer that has a third and fourth winding.

3. The double balanced mixer according to claim 1, wherein the second balun includes a third transformer that has a fifth and a sixth winding and a fourth transformer that has a seventh and an eighth winding.

4. The double balanced mixer according to claim 1, wherein the third balun includes a fifth transformer that has a ninth and a tenth winding and a sixth transformer that has an eleventh and a twelfth winding.

5. The double balanced mixer according to claim 1, wherein each diode ring comprises:

a) a first diode having an anode and a cathode;

b) a second diode having an anode and a cathode, the cathode of the first diode connected to the anode of the second diode;

c) a third diode having an anode and a cathode, the cathode of the second diode connected to the anode of the third diode; and

d) a fourth diode having an anode and a cathode, the cathode of the third diode connected to the anode of the fourth diode and the cathode of the fourth diode connected to the anode of the first diode.

6. The double balanced mixer according to claim 1, wherein parasitic elements of the local oscillator signal are cancelled in the second and third baluns.

7. The double balanced mixer according to claim 1, wherein isolation between the local oscillator signal and the RF and intermediate frequency signals is increased.

8. A double balanced mixer, comprising:

(a) a local oscillator balun operable to receive a local oscillator signal;

(b) a RF balun operable to receive a RF signal;

(c) a first mixer having a first input port coupled to the local oscillator balun, a second input port coupled to the RF balun, and an output port providing an intermediate frequency signal;

(d) a second mixer coupled in parallel with the first mixer, the second mixer having a first input port coupled to the local oscillator balun, a second input port coupled to the RF balun, and an output port providing an intermediate frequency signal; and

(e) an intermediate frequency balun coupled to the output ports of the first and second mixers.

9. The double balanced mixer according to claim 8, wherein the first and second mixers are each ring diodes.

10. The double balanced mixer according to claim 9, wherein the ring diodes each comprise four diodes.

11. The double balanced mixer according to claim 10, wherein the baluns each have a pair of transformers.

12. The double balanced mixer according to claim 11, wherein the transformers each have a pair of windings.

13. The double balanced mixer according to claim 8, wherein parasitic elements of the local oscillator signal are cancelled in the RF and intermediate frequency baluns.

14. The double balanced mixer according to claim 8, wherein isolation between the local oscillator signal and the RF and intermediate frequency signals is increased.

15. A method of double balanced mixing, comprising:

(a) applying a local oscillator signal through a local oscillator balun to a first and second double balanced mixer, the first and second mixers coupled to each other;

(b) applying an RF signal through an RF balun to the first and second mixers;

(c) mixing the local oscillator signal with the RF signal in the first and second mixers to obtain an intermediate frequency signal; and

(d) providing the intermediate frequency signal through an intermediate frequency balun to an output port.

16. The method of double balanced mixing according to claim 15, wherein the first and second mixers are coupled in parallel.

17. The method of double balanced mixing according to claim 16, wherein the first and second mixers each are four diodes coupled in a ring configuration.

18. A double balanced mixer for mixing an RF signal with a local oscillator signal to provide at an output an intermediate frequency signal, comprising:

(a) local oscillator balun means for receiving a local oscillator signal;

(b) RF balun means for receiving an RF signal;

(c) mixer means, the mixer means coupled to the local oscillator balun means and the RF balun means, respectively, the mixer means mixing the local oscillator signal and the RF signal to produce an intermediate frequency signal; and

(d) intermediate frequency balun means coupled to the mixer means.

19. The double balanced mixer according to claim 18, wherein the mixer means is a first and second mixer connected in parallel.

20. The double balanced mixer according to claim 19, wherein the first and second mixers each are four diodes coupled in a ring configuration.

21. The double balanced mixer according to claim 20, wherein parasitic elements of the local oscillator signal are canceled in the RF and intermediate frequency balun means such that isolation between the local oscillator signal and the RF and intermediate frequency signals is increased.